synonym of polyglyceryl oleate (ester) as being oleci acid polyglyceride (I-958, 9007-48-1). The "poly" is "tri" when the number of glycerol monomers is three, "tetra" when the number is four and "di" when the number is two.

Applicant responds as follows:

Applicant respectfully traverses the Examiner's rejections of the claims over GB 1470726, Hammer and Colliopoulos. The legal arguments pertaining to findings of anticipation and obviousness have been made of record in Applicants' response to the office action mailed August 28, 2002. They have therefore not been restated here.

In the response to Applicant's previous arguments, the Examiner refers to two synonyms listed in the Dictionary of Chemical Names and Synonyms. Specifically, the Examiner refers to the compound "glyceryl trioleate" and notes that its synonym is "oleic acid triglyceride". Similarly, the Examiner refers to the compound "polyglyceryl oleate" and notes that its synonym is "oleic acid polyglyceride". In referring to these synonyms, the Examiner appears to be analogizing the two compounds to one another. In making this analogy, the Examiner states that the term "poly" is "tri" when the number of glycerol monomers is three, "tetra" when the number is four and "di" when the number is two.

As discussed below, the Examiner's analysis and resulting conclusion are incorrect. The compound "polyglyceryl oleate" a.k.a. "oleic acid polyglyceride", is a homopolymer of 1,2,3,-propanetriol, *i.e.*, glycerol, to which an oleic acid molecule is esterified. In other words, the term "poly" in "polyglyceryl oleate" refers to the glycerol polymer. However, in the compound "glyceryl trioleate", *i.e.*, "oleic acid triglyceride", the "tri" refers to the number of oleic acid molecules, **not** the number of glycerol molecules. This is borne out by the chemical formula provided for "glyceryl trioleate" in the Dictionary of Chemical Names and Synonyms ($C_{57}H_{104}O_6$). The number of carbons

in the compound, *i.e.*, 57, indicates the presence of three oleic acid chains (C_{18} X 3= 54 carbons) and one glycerol molecule (3 carbons). If, as suggested by the Examiner, the term "tri" in "glyceryl trioleate" referred to the number of glycerol molecules, then the number of carbons in the compound would be 27, *i.e.*, 3 each from the three glycerol molecules (total of nine) plus 18 carbons from the oleic acid molecule. Therefore, the Examiner's conclusion that the term "tri" in the compound "oleic acid triglyceride" stands for three glycerols is incorrect. In sum, "oleic acid triglyceride" does not contain three glycerol molecules and one oleic acid molecule as indicated by the Examiner, but rather is made up of three oleic acid molecules and one glycerol molecule.

Furthermore, the Examiner's statement that the "poly" is "tri" when the number of glycerol monomers is three, "tetra" when the number is four and "di" when the number is two, implies that it is the Examiner's position that a "triglyceride" is made up of three glycerol molecules and a "diglyceride" is made up of two glycerol molecules. This is an incorrect inference. The terms "monoglyceride", "diglyceride" and "triglyceride" have well known meanings to those of ordinary skill in the art. *See* Biochemistry, Albert L. Lehninger, 2d Edition (1975) at p. 284 (attached hereto as Exhibit A). When all three hydroxyl groups of a glycerol molecule are esterified with fatty acids, the structure is a "triacylglycerol" or a "triglyceride". Similarly, a diglyceride contains two esterified fatty acids and a monoglyceride contains one esterified fatty acid. *See* Formulae of mono-, di- and tri-glyceride at p. 284. In sum, the Examiner's position that a "triglyceride" refers to a compound having three glycerols is incorrect.

As stated in Applicants previous response, the the mixed mono and diglyceride taught in GB 1470726 **is not** a polyglyceryl ester. Similarly, the mono-, di- and

triglycerides used in the coating composition described in Hammer, **are not** polyglyceryl esters, and characterizing them as such is chemically incorrect.

CONCLUSION

Applicant believes he has addressed all of the Examiner's concerns and rejections. In conjunction with the arguments above, Applicant believes that the claims are now in condition for allowance and respectfully requests that the Examiner grant such an action. If any questions or issues remain in the resolution of which the Examiner feels will be advanced by a conference with the Applicant's attorney, the Examiner is invited to contact the attorney at the number noted below.

No fees are believed to be due in connection with this response. The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account 10-0447 (Reference No. 54916-00318USPT).

Respectfully submitted,

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the gas phase leaving the column can be measured by a variety of extremely sensitive detectors. In one, the flame-ionization detector, the carrier gas stream containing the fatty acid esters is mixed with a stream of hydrogen and air and burned in a high-voltage electric field. The current generated by the flow of ionized fragments of the fatty acid in the flame is automatically recorded on a chart, which shows a series of separate peaks. Each peak corresponds to a separate fatty acid, and the area under the peak is proportional to the amount. Very complex mixtures of fatty acids can be sorted out in this fashion and quantitated; the amount of sample required for analysis is only a fraction of a milligram. Gas-liquid chromatography can also be used to analyze mixtures of sterols and hydrocarbons, as well as other compounds that are volatile at reasonable temperatures (up to 350°C) or can be converted chemically into volatile derivatives.

Triacylglycerols (Triglycerides)

Fatty acid esters of the alcohol glycerol (Figure 11-4) are called *acylglycerols* or *glycerides;* they are sometimes referred to as "neutral fats," a term that has become archaic. When all three hydroxyl groups of glycerol are esterified with fatty acids, the structure is called a *triacylglycerol* (Figures 11-4 and 11-5). (Although the name "triglyceride" has been traditionally used to designate these compounds, an international nomenclature commission has recommended that this chemically inaccurate term no longer be used.) Triacylglycerols are the most abundant family of lipids and the major components of depot or storage lipids in plant and animal cells. Triacylglycerols that are solid at room temperature are often referred to as "fats" and those which are liquid as "oils." *Diacylglycerols* (also called diglycerides) and *monoacylglycerols* (or monoglycerides) are also found in nature, but in much smaller amounts.

Triacylglycerols occur in many different types, according to the identity and position of the three fatty acid components esterified to glycerol. Those with a single kind of fatty acid in all three positions, called *simple* triacylglycerols, are named after the fatty acids they contain. Examples are *tristearoylglycerol*, *tripalmitoylglycerol*, and *trioleoylglycerol;* the trivial and more commonly used names are *tristearin*, *tripalmitin*, and *triolein*, respectively. *Mixed* triacylglycerols contain two or more different fatty acids. Triacylglycerols containing two different fatty acids A and B can exist in six different isomeric forms, BBA, AAB, ABA, ABB, BAA, and BAB, of which four (AAB, BAA, ABB, BBA) are stereoisomers (see below). The naming of mixed triacylglycerols can be illustrated by the example of 1-palmitoyldistearoylglycerol (trivial name, 1-palmitodistearin). Most natural fats are extremely complex mixtures of simple and mixed triacylglycerols.

Although there have been many attempts to discover the biological ground rules that determine the mode of distribution of different fatty acids in natural triacylglycerols, no simple, all-encompassing generalizations can yet be made.

Figure 11-4
Glycerol and mono-, di-, and triacylglyc[erols]

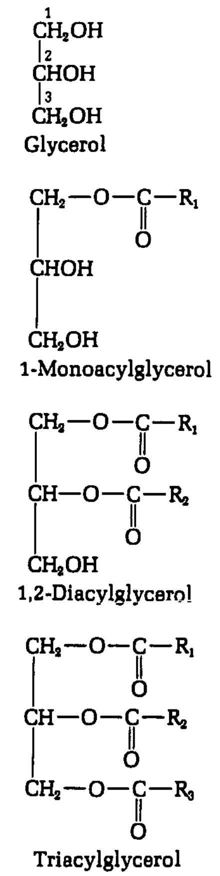

Figure 11-5
Space-filling model of 1-myristoyldipalmitoylglycerol, a mixed triacylglycerol.